ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

FACULTE DES SCIENCES DE LA VIE - FSV

Safe Handling and Storage of Dry Ice

Faculty Safety Rules

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1. General information

Dry ice is solidified carbon dioxide (CO2) which temperature is -79 °C. Dry ice does not melt. Instead, it sublimates (goes directly from a solid to a gas), releasing CO2 vapour. CO2 vapour is 1.5 x heavier than air. In confined, poorly ventilated spaces, it can displace air, causing asphyxiation. It is even possible for CO2 vapour to accumulate in low-lying areas out-of-doors under zero or very light wind conditions.

2. Handling Instructions

- Do not allow dry ice to touch bare skin. Dry ice in contact with skin may result in frostbite. Prolonged exposure will cause severe frostbite.
- Always wear protective gloves whenever handling dry ice.
- Always wear protective glasses whenever crushing dry ice.

3. Storage Instructions

- Dry Ice will sublimate into Carbon Dioxide (CO2) gas. 1 kg of Dry Ice will generate about 500 L of CO2.
- Store Dry Ice in an insulated container. The better the insulation, the slower the Dry Ice sublimation.
- Do not store Dry Ice in a refrigerator or a freezer.
- Do not store Dry Ice in an airtight container; never store in a glass container. The sublimation of Dry Ice into Carbon Dioxide gas will cause an airtight container to expand, rupture or burst.
- Always store Dry Ice in a well ventilated area. Avoid storing Dry Ice in unventilated areas such as cellars or car boots. The sublimated Carbon Dioxide gas will sink to low areas and replace oxygenated air. Carbon Dioxide gas at elevated concentrations may be fatal when breathed.
- Do not leave Dry Ice on a tiled or solid surface countertop as the extreme cold could crack it.

4. Ventilation Requirements

- Although carbon dioxide only makes up 0.035% of the atmosphere, it can be toxic in quantities greater than 5%. Breathing is accelerated and become painful. Excess of CO2 will eventually cause asphyxiation.
- If Dry Ice has been in a closed auto, room, or walk-in refrigerator for more than 10 minutes, open doors and allow adequate ventilation before entering. Leave the area immediately if breathing becomes difficult, or if dizziness, headache or light-headed feeling is noticed.
- Carbon Dioxide (CO2) is 1.5 x heavier than air and will accumulate in low spaces.
- Do not enter closed Dry Ice storage areas without first fully ventilating the space.

5. First aid measures

Inhalation of Sublimed Vapour:

- Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Low concentrations of CO2 caused increased respiration and headache.
- Call 115.
- Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Apply artificial respiration if breathing stops.

Skin / eye contact with Dry Ice:

- Treat Dry ice burns the same as a regular heat burns.
- Immediately flush eyes thoroughly with water for at least 15 minutes. In case of frostbite, spray with tepid water for at least 15 minutes. In case of severe frostbites, call 115.

4. Disposal

- Leave Dry ice at room temperature in a well-ventilated area. It will sublimate from a solid to a gas.
- Do not dispose of dry ice in sewers, sinks, or toilets. The extreme cold will harm sink disposals, toilet parts, and pipes.